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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,544	11/26/2003	Koichi Kondo	245936US2SRD	5702
22850	7590	08/14/2007		
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER SHARON, AYAL I	
			ART UNIT 2123	PAPER NUMBER
			NOTIFICATION DATE 08/14/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/721,544

Applicant(s)

KONDO, KOICHI

Examiner

Ayal I. Sharon

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6-10,12-16 and 18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,6-10,12-16 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Introduction

1. Claims 1-4, 6-10, 12-16, and 18 of U.S. Application 10/721,544 filed on 11/26/2003 are currently pending.
2. The application claims benefit of Japanese Application 2002-344228 filed on 11/27/2002.

Information Disclosure Statement

3. Reference AX in the IDS filed 2/24/04, and references AW, AX, and AY of the IDS filed on 4/26/04 lack publication dates. This does not conform to the requirements set forth in 37 CFR 1.98(b)(5). The references have not been considered.

Claim Objections

4. Claim 1 is objected to because of the following informalities: the word "of" in the phrase "numerical integration using of the" in line 16 should be deleted. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

Art Unit: 2123

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 6, 12, and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
7. Claim 6 recites the limitation "all the continuous equations" in line 9. There is insufficient antecedent basis for this limitation in the claim.
8. Claim 12 recites the limitation "generating the table" in line 15. There is insufficient antecedent basis for this limitation in the claim.
9. Claim 18 recites the limitation " all the continuous equations" in line 13. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. The prior art used for these rejections is as follows:
12. U.S. Patent 6,680,812 to Iwashiro. ("**Iwashiro**").
13. **Claims 1-4, 6-10, 12-16, and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Iwashiro.**

14. In regards to Claim 1, Iwashiro teaches the following limitations:

1. (Currently Amended) A simulation method for simulating a behavior of a mechanism of a mechanical device that is regulated by mechanism control software using a hybrid model of the mechanical device, the hybrid model including a state transition model and a continuous system model, the method comprising:

analyzing the hybrid model to extract a first description data of the state transition model and second description data of the continuous system model;

(See Iwashiro, especially: col.6, line 20 to col.7, line 25. In particular, see the "table" created during the tabulation of continuous time model into a discrete one, in col.7, lines 6-25)

generating a table representing a relationship between continuous system equations and switching conditions thereof, based on the extracted first description data;

(See Iwashiro, especially: see the "three switching modes" in col.7, lines 54-58)

generating a plurality of internal data expressions of all the continuous system equations, based on the extracted second description data;

(See Iwashiro, especially: Equations 1-4 in cols.6-7)

starting a simulation of the mechanism after completion of generating the table and generating the internal data expressions;

(See Iwashiro, especially: col.7, lines 25-30 and 54-58.)

selecting an active continuous system equation by looking up the table according to an occurrence of an event; and

(See Iwashiro, especially: col.6, line 20 to col.7, line 25. In particular, see the difference between "single rate" and "multi rate". Both refer to the table "in each control input period, starting from the time when the seek operation of the head starts.")

outputting data that represents the behavior of the mechanism by solving the selected active continuous system equation by numerical integration using of the internal data expressions that corresponds to the

selected active one or more continuous system equations, wherein the outputted data is supplied to the mechanism control software as a response to a control signal provided from the mechanism control software.

(See Iwashiro, especially: col.6, line 20 to col.7, line 25. In particular, see the "table" created during the tabulation of continuous time model into a discrete one, in col.7, lines 6-25)

15. In regards to Claim 2, Iwashiro teaches the following limitations:

2. (Currently Amended) The method according to claim 1, further comprising: switching the active one of the continuous system equations to another continuous system equation by operating a flag assured for each of the continuous system equations.

(See Iwashiro, especially: see the "three switching modes" in col.7, lines 48-52)

16. In regards to Claim 3, Iwashiro teaches the following limitations:

3. (Currently Amended) The method according to claim 1, wherein the event is responsive to one of the signal and an evaluation result of an internal variable.

(See Iwashiro, especially: col.7, lines 25-30 and 54-58.)

17. In regards to Claim 4, Iwashiro teaches the following limitations:

4. (Original) The method according to claim 1, further comprising executing a kinematics simulation which uses the data that represents the behavior of the mechanism.

(See Iwashiro, especially: col.7, lines 25-30 and 54-58.)

18. In regards to Claim 6, Iwashiro teaches the following limitations:

6. (Currently Amended) A simulation method for simulating a behavior of a mechanism of a mechanical device that is regulated by mechanism control software using a hybrid model of the mechanical device, the hybrid model including a state transition model and a continuous system model, the method comprising:

analyzing the hybrid model to extract a first description data of a the state transition model and a second description data of the continuous system model;

(See Iwashiro, especially: col.6, line 20 to col.7, line 25. In particular, see the "table" created during the tabulation of continuous time model into a discrete one, in col.7, lines 6-25)

generating a first program code based on the extracted first description data;

(See Iwashiro, especially: Equations 1-4 in cols.6-7)

generating a second program code based on the extracted second description data;

(See Iwashiro, especially: Equations 1-4 in cols.6-7)

generating a plurality of internal data expressions of all the continuous system equations by executing the second program;

(See Iwashiro, especially: see the "three switching modes" in col.7, lines 54-58)

starting a simulation of the mechanism after completion of the steps of generating the first program code, the second program code, and the internal data expressions;

(See Iwashiro, especially: col.7, lines 25-30 and 54-58.)

switching continuous system equations according to switching conditions thereof by executing the first program; and

(See Iwashiro, especially: col.6, line 20 to col.7, line 25. In particular, see the difference between "single rate" and "multi rate". Both refer to the table "in each control input period, starting from the time when the seek operation of the head starts.")

outputting data that represents the behavior of the mechanism by solving the continuous system equations by numerical integration using the internal data expressions, wherein the outputted data is supplied to the mechanism control software as a response to a control signal provided from the mechanism control software.

(See Iwashiro, especially: col.6, line 20 to col.7, line 25. In particular, see the "table" created during the tabulation of continuous time model into a discrete one, in col.7, lines 6-25)

19. In regards to Claim 7, Iwashiro teaches the following limitations:

7. (Currently Amended) A simulation apparatus which simulates a behavior of a mechanism of a mechanical device that is regulated by mechanism control software using a hybrid model of the mechanical device, the hybrid model including a state transition model and a continuous system model, comprising:

an analyzing unit configured to analyze the hybrid model to extract a first description data of the state transition model and a second description data of the continuous system model;

(See Iwashiro, especially: col.6, line 20 to col.7, line 25. In particular, see the "table" created during the tabulation of continuous time model into a discrete one, in col.7, lines 6-25)

a first generating unit configured to generate a table representing a relationship between continuous system equations and switching conditions thereof, based on the extracted first description data;

(See Iwashiro, especially: see the "three switching modes" in col.7, lines 54-58)

a second generating unit configured to generate a plurality of internal data expressions of all the continuous system equations, based on the extracted second description data; and

(See Iwashiro, especially: Equations 1-4 in cols.6-7)

a simulation execution unit configured to:

start a simulation of the mechanism after generating the table and the internal data expressions;

(See Iwashiro, especially: col.7, lines 25-30 and 54-58.)

select an active continuous system equation by looking up the table according to an occurrence of an event; and

(See Iwashiro, especially: col.6, line 20 to col.7, line 25. In particular, see the difference between "single rate" and "multi rate". Both refer to the table "in each control input period, starting from the time when the seek operation of the head starts.")

output data that represents the behavior of the mechanism by solving the selected active continuous system equation by numerical integration using one or more of the internal data expressions that corresponds to the selected active continuous system equations, wherein the outputted data is supplied to the mechanism control software as a response to a control signal provided from the mechanism control software.

(See Iwashiro, especially: col.6, line 20 to col.7, line 25. In particular, see the "table" created during the tabulation of continuous time model into a discrete one, in col.7, lines 6-25)

20. In regards to Claim 8, Iwashiro teaches the following limitations:

8. (Original) The apparatus according to claim 7, wherein the simulation execution unit switches an active one of the continuous system equations to another continuous system equation by operating a flag assured for each of the continuous system equations.

(See Iwashiro, especially: col.7, lines 25-30 and 54-58.)

21. In regards to Claim 9, Iwashiro teaches the following limitations:

9. (Currently Amended) The apparatus according to claim 7, wherein the event is responsive to one of the control signal and an evaluation result of an internal variable.

((See Iwashiro, especially: col.7, lines 25-30 and 54-58.)

22. In regards to Claim 10, Iwashiro teaches the following limitations:

10. (Original) The apparatus according to claim 7, further comprising a kinematics simulation execution unit configured to execute a kinematics simulation which uses the data that represents the behavior of the mechanism.

(See Iwashiro, especially: col.7, lines 25-30 and 54-58.)

23. In regards to Claim 12, Iwashiro teaches the following limitations:

12. (Currently Amended) A simulation apparatus which simulates a behavior of a mechanism of a mechanical device that is regulated by mechanism control software using a hybrid model of the mechanical device, the hybrid model including a state transition model and a continuous system model, comprising:

an analyzing unit configured to analyze the hybrid model to extract a first description data of a the state transition model and a second description data of the continuous system model;

(See Iwashiro, especially: col.6, line 20 to col.7, line 25. In particular, see the "table" created during the tabulation of continuous time model into a discrete one, in col.7, lines 6-25)

a first generating unit configured to generate a first program code based on the extracted first description data;

(See Iwashiro, especially: see the "three switching modes" in col.7, lines 54-58)

a second generating unit configured to generate a second program code based on the extracted second description data;

(See Iwashiro, especially: Equations 1-4 in cols.6-7)

a third generating unit configured to generate a plurality of internal data expressions of all the continuous system equations by executing the second program;

(See Iwashiro, especially: col.6, line 20 to col.7, line 25. In particular, see the "table" created during the tabulation of continuous time model into a discrete one, in col.7, lines 6-25)

a simulation execution unit configured to:

start a simulation of the mechanism after generating the table and the internal data expressions;

(See Iwashiro, especially: col.7, lines 25-30 and 54-58.)

switch continuous system equations according to switching conditions thereof by executing the first program; and

(See Iwashiro, especially: col.6, line 20 to col.7, line 25. In particular, see the difference between "single rate" and "multi rate". Both refer to the table "in each control input period, starting from the time when the seek operation of the head starts.")

an outputting unit configured to output data that represents the behavior of the mechanism by solving the continuous system

equations by numerical integration using the internal data expressions, wherein the outputted data is supplied to the mechanism control software as a response to a control signal provided from the mechanism control software.

(See Iwashiro, especially: col.6, line 20 to col.7, line 25. In particular, see the "table" created during the tabulation of continuous time model into a discrete one, in col.7, lines 6-25)

24. Claims 13-16 and 18 are rejected based on the same reasoning as claims 1-4 and 6. Claims 13-16 and 18 are computer program claims that recite limitations equivalent to those recited in method claims 1-4 and 6 and taught throughout Iwashiro.

Response to Amendment

Claim Rejections - 35 USC § 101

25. Examiner finds that applicant's amendments filed on 5/8/2007 overcome the 35 USC § 101 rejections. These rejections are withdrawn.

Claim Rejections - 35 USC § 102

26. Examiner finds that applicant's amendments filed on 5/8/2007 overcome the 35 USC § 102 rejections based on the *Mosterman et al.* reference. These rejections are withdrawn. Applicant's amendment to the claims, however, has necessitated the application of new rejections based on *Iwashiro*.

Conclusion

27. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ayal I. Sharon whose telephone number is (571) 272-3714. The examiner can normally be reached on Monday through Thursday, and the first Friday of a bi-week, 8:30 am – 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached at (571) 272-3753.

Any response to this office action should be faxed to (571) 273-8300, or mailed to:

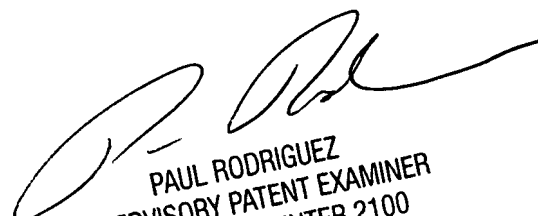
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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Tech Center 2100 Receptionist, whose telephone number is (571) 272-2100.

Ayal I. Sharon
Art Unit 2123
August 1, 2007



PAUL RODRIGUEZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100